

NEW AMERICAN ORIBATOIDEA.

BY H. E. EWING,

ARCOLA, ILLINOIS.

(WITH PLATES II-VI.)

The group to which the "beetle mites" belong has been considered by many authors as a family. Mr. A. D. Michael, in his "British Oribatidæ," regarded the group as such; and later, in 1898, in, "Das Tierreich" (Lief. 3. Oribatidæ) he divided the family into seven subfamilies. Mr. Nathan Banks in a treatise entitled, "The Acarina or Mites" (Proc. U. S. Nat. Mus., vol. 28, pp. 1-114) has regarded the group as a superfamily which he calls Oribatoidea, dividing it into two families as follows:

Cephalothorax movably attached to the abdomen; palpi four-jointed.

Fam. HOPLODERMIDÆ.

Cephalothorax not movable; palpi five-jointed..... Fam. ORIBATIDÆ.

I agree with Mr. Banks in calling the group a superfamily. The separation of those forms which have the cephalothorax movably attached to the abdomen, from those which have the cephalothorax coalescing with the abdomen is, I think, very natural. These forms to which he gives the family name Hoplodermidæ have many other characters of prime importance which separate them from the rest of the group as will be seen by the characters assigned to each of the groups in the following table. I have also followed G. Canestrini in separating those forms which have abdominal wings from those which do not; and retain the name he applied to those without the wings, Nothridæ. The author gives the following families into which the group may be divided and the characters of each.

In this paper thirty-one new species are described. The writer is very much indebted to Mr. C. R. Crosby for the specimens collected in Missouri; to Mr. C. A. Hart for Texas material and to J. D. Hood, C. A. Hart and L. M. Smith for collections in Illinois.

Superfamily ORIBATOIDEA.

— Cephalothorax hinged to abdomen and capable of being folded down on the ventral surface of the same; body compressed; without tracheæ; mandibles very large and prominent; palpi of four segments; integument often brittle and thin; legs very stout.....HOPLODERMIDÆ.

— Cephalothorax not hinged to abdomen but firmly and immovably attached to the same; body often depressed; with tracheæ opening at the acetabula of the legs; mandibles small; palpi of five segments; integument well chitinized and usually stout; legs often long and slender.

— Abdomen with chitinous wing-like expansions called pteromorphæ, which are often capable of being folded over the flexed legs; legs never enlarged or thickened; integument usually smooth and shiny.

ORIBATIDÆ.

— Abdomen without wing-like expansions; segments of legs sometimes thickened or swollen; integument often rough.....NOTHRIDÆ.

Family ORIBATIDÆ.

Genus PELOPS C. L. Koch.

Mandibles long, styliform and terminating in minute chelæ; abdomen sometimes pitted or sculptured and often provided with a rectangular projection from the anterior margin; hairs of body spatulate.

Up to the present time only two species of this genus have been found in America. In Europe the genus is rich in species.

KEY TO SPECIES.

1. Abdomen with prominent spatulate hairs on its posterior aspect.

P. laticuspidatus sp. nov.

2. Abdomen hairless except for the large pair of anterior marginal hairs.

P. bifurcatus sp. nov.

Pelops laticuspidatus, new species. (Plate II, Figs. 1 and 2.)

Body chestnut brown; legs paler than the body.

No projection from the anterior margin of the abdomen over the cephalothorax. Cephalothorax rather small; as broad as long. Lamella as long as the cephalothorax, of about uniform width throughout. The anterior two fifths of the lamella is free and corresponds to the lamellar cusp of most species; translamella about one half as broad as the lamellæ and about twice as long as it is broad; prominent lateral lamellæ also present. The lateral lamellæ are triangular in shape, being pointed anteriorly and bearing a stout, curved pectinate bristle. Lamellar hairs three fourths as long as lamellæ, curved and finely pectinate. Pseudostigma slightly projecting; pseudostigmatic organ with small, short peduncle and large subcapitate head, which is truncate at the end.

Abdomen subglobose; pteromorphæ not projecting beyond the anterior margin of abdomen. Dorsum with several clavate hairs including two pairs situated at the tip; the upper pair being about twice as long as the lower pair.

Anterior pair of legs almost as long as the body. Femur shorter than tibia. Ungues tridactyle; dactyles unequal.

Length, 0.42 mm.; breadth, 0.27 mm.

In moss. Collected by C. A. Hart at Pulaski, Ill.

***Pelops bifurcatus*, new species.** (Plate II, Fig. 3.)

Reddish brown; integument smooth and shiny.

Cephalothorax as broad as long; lamellæ consisting of two long, narrow blades about as long as the cephalothorax, lying parallel to the median line and ending each in a sharp cusp which extends almost as far as the tip of the rostrum; translamella a chitinous ridge, incomplete in the middle. There is a small pair of lateral lamellæ curved inwards at the tip. Lamellar hairs short, about twice as long as the lamellar cusps, slightly pectinate and curved outwards; antero-lateral hairs twice as long as lamellar hairs, strongly curved as usual and pectinate on the external edge only. Pseudostigmatic organs clavate, directed forwards and about one half as long as the cephalothorax.

Abdomen globose; pteromorphæ truncate anteriorly and not extending beyond the anterior margin of abdomen, anterior free margin of pteromorphæ slightly concave. Rectangular projection present at the front margin of abdomen, extending twice as far in a transverse direction as in the longitudinal direction. From the anterior margin of the abdomen, on each side just inwards to the pseudostigmatic organs extend forwards two very large, flat setæ. The shape of these setæ is very characteristic of the species. Their general shape is spatulate but they are deeply bifid in front and have serrate margins. Abdomen otherwise hairless. Genital covers much smaller than the anal covers and situated about one and one half times their length in front of the latter.

Anterior pair of legs about one and one third times as long as the cephalothorax. Tarsus of leg I slightly longer than the tibia; tarsus and tibia of leg II subequal in length but the tibia is somewhat thickened at the distal end. Ungues tridactyle; dactyles unequal.

Length, 0.38 mm.; breadth, 0.30 mm.

Under logs. Collected by the writer at Havana, Ill. Two specimens.

Genus ORIBATA Latreille.

Hairs of body never spatulate; claws tridactyle; wings of abdomen never attached to any part of the cephalothorax; lamellæ attached by their inner margin to the dorsal surface of the cephalothorax.

The species of this genus are by far the most numerous of any of the genera of Oribatidæ.

KEY TO SPECIES.

- Div. I. Pteromorphæ large, extending much beyond the anterior margin of the abdomen, always capable of being folded down so as to conceal almost completely the legs when the same are flexed.
- Div. II. Pteromorphæ truncate anteriorly, not extending beyond the anterior margin of abdomen, and seldom capable of being folded over the flexed legs.

Div. I.

1. No true lamellæ present; a pair of lateral lamellæ, very closely appressed to the dorso-vertex. (Subdiv. (a).).....2.
Lamellæ blade-like. (Subdiv. (b).).....*O. quadricuspidata* sp. nov.
2. With dorsal surface of cephalothorax sloping very markedly downward as you pass from the dorso-vertex to rostrum; black species.....*O. nigra* sp. nov.
Dorsal surface of cephalothorax not receding as you pass from the dorso-vertex to rostrum; color brown.....3.
3. Wings of abdomen large, two thirds as broad as the cephalothorax when viewed from above.....*O. macroptera*. sp. nov.
Wings of abdomen about one third as broad as the cephalothorax when viewed from above.....4.
4. Wings of abdomen with wrinkles.....*O. rugosala* sp. nov.
Wings of abdomen smooth.....*O. minuta* sp. nov.

Oribata quadricuspidata, new species. (Plate II, Figs. 4 and 5.)

Light brown; integument rather thin and brittle, surface smooth.

Cephalothorax about one third as long as the abdomen and very peculiar in possessing grooves for the reception of the lamellæ, which gives the dorso-vertex the appearance of projecting over the base of the lamellæ. Lamellæ prominent, almost as long as the cephalothorax and very deeply bifid in front, the inner cusps of the lamellæ extend about one half their length beyond the tip of the outer cusps. No translamella. Two pairs of lateral lamellæ, the inner pair is much the longest and is curved towards the median plane; the outer pair is short and stout. Lamellar hairs long, slightly curved at the base; interlamellar hairs similar to lamellar hairs, but straight and longer; they are situated almost approximate to the posterior margin of cephalothorax; anterior lateral hairs stout, curved and pectinate. Pseudostigmatic organs very large, clavate and directed forwards and towards the median plane. Palpi prominent.

Abdomen subglobose; pteromorphæ triangular, truncate, not extending beyond the anterior margin of abdomen. Genital covers slightly smaller than anal covers and situated one and one half times their length in front of the latter. Abdomen hairless.

Legs rather small and bearing several stout, short, pectinate bristles. Ungues tridactyle.

Length, 0.32 mm.; breadth, 0.21 mm.

Under the bark of shell-bark hickory. Collected by J. D. Hood, at Urbana, Illinois. Two specimens.

Oribata nigra, new species. (Plate II, Fig. 6.)

Body black; legs and pteromorphæ brown. Integument thick and smooth.

The cephalothorax is peculiar in that the dorsal surface slopes downwards rapidly from the posterior part of the cephalothorax to the rostrum, the rostrum being much lower than the posterior dorsal surface of the cephalothorax. Lamellæ rudimentary; translamella absent. Superior hairs situated laterally, long and curved

markedly inwards; anterior lateral hairs slightly shorter and somewhat stouter than the superior hairs; interlamellar hairs similar to superior hairs but smaller. Pseudostigmatic organ fusiform, about as long as the tarsus of leg I, serrate and very slightly curved.

Abdomen subglobose; pteromorphæ large and projecting forwards beyond the middle of the cephalothorax, the anterior free edge appearing rounded from above; in ventral aspect the anterior edge of the pteromorphæ is emarginate. Abdomen hairless.

Legs short; anterior pair about two thirds as long as abdomen; tibia and tarsus of leg I subequal. The legs are clothed with many simple bristles, also with a few short, stout, curved, pectinate bristles, which are situated on the inner side. Ungues large, tridactyle; dactyles equal.

Length, 0.78 mm.; breadth, 0.62 mm.

Under a large stone. Collected by the writer at Batavia, Ill. Two specimens.

Oribata macroptera, new species. (Plate II, Fig. 7.)

Body dark reddish brown; wings and legs light brown.

No true lamellæ present but a pair of lateral lamellæ closely appressed to sides of cephalothorax. Superior bristles straight, pectinate, about one half as long as the cephalothorax; antero-lateral bristles about as long as the superior bristles, curved as usual but apparently simple. Pseudostigmatic organ subfusiform, recurved, pectinate, about as long as tibia of leg I.

Abdomen broadly rounded posteriorly; anterior one half of lateral margin, where the pteromorphæ are attached, straight. Pteromorphæ large, broad, extending almost to the tip of the cephalothorax, rounded anteriorly, posterior dorsal margin notched. Abdomen hairless. Genital covers about three fifths as long as the anal covers and situated twice their length in front of the latter; anal covers situated about one third their length from the posterior margin of the ventral plate.

Anterior pair of legs as long as the body; tarsus one and one half times as long as the tibia; gennal almost equal to the tibia in length. Ungues tridactyle; dactyles unequal.

Length, 0.56 mm.; breadth, 0.39 mm.

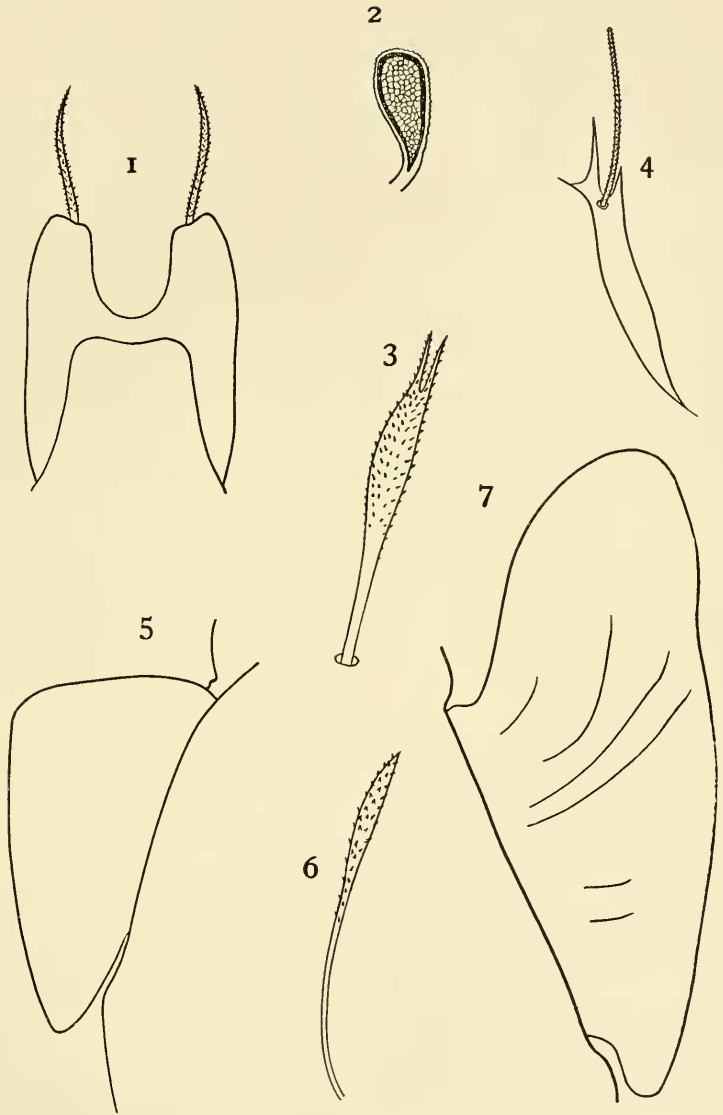
In sweepings from grass. Collected by C. A. Hart at Brownsville, Tex. Several specimens.

This species is related to *O. texana* Banks and *O. depressa* Banks but differs from the former in the length of the anterior pair of legs and in the shape of the pseudostigmatic organs and from the latter in the size of the wings and in the width of the body.

Oribata rugosala, new species. (Plate III, Fig. 8.)

Chestnut brown; integument of abdomen smooth, of wings wrinkled (hence the name, *rugosa*, wrinkled + *ala*, wing).

Cephalothorax short and broad; no lamellæ or translamella; antero-lateral hairs curved and pectinate as usual. There is a single pair of hairs upon the dorsal surface



H. E. Ewing, del.

Oribatoidea.

of the cephalothorax near the posterior margin, erect, short and very slightly pectinate. Pseudostigmatic organ of medium length, clavate, recurved and slightly barbed.

Abdomen as broad as long; hairless. Genital covers rectangular, one and one half times their length in front of the much larger anal covers.

Tarsus of leg I slightly longer than the tibia. Claws tridactyle; dactyles unequal. Length, 0.56 mm.; breadth, 0.43 mm.

Under bark of a tree standing in the water, at the mouth of Spoon River, Ill.

This species is related to *Q. macroptera*, but differs from it in having a shorter and stouter pedicel to the pseudostigmatic organ, in having much shorter tarsi for legs I and in not having the distal end of the tibia of leg I swollen. It is also related to *O. robusta* Banks, but differs from it in size, being much smaller; in not having the four prominent bristles on the posterior margin of abdomen and in having the superior bristles of cephalothorax much shorter.

Oribata minuta, new species. (Plate III, Figs. 9 and 10.)

Light brown; integument rather thin, surface smooth.

Cephalothorax broad and short. Lamellæ situated laterally and adhering closely to the cephalothorax. Dorso-vertex bearing a single pair of short, straight hairs, situated near the posterior margin of the cephalothorax. Pseudostigmatic organ with a rather long, recurved peduncle and an enlarged, long, tapering, serrate head.

Abdomen subglobose. Pteromorphæ two thirds as long as abdomen, rounded in front and extending beyond the middle of the cephalothorax. Genital covers two thirds as long as anal covers and situated about one and one half times their length in front of the anal covers. Abdomen hairless.

Legs of medium size; femur enlarged. Ungues tridactyle.

Length, 0.35 mm.; breadth, 0.24 mm.

Under old boards. Collected by author, Arcola, Illinois. Three specimens.

Div. II.

1. With a translamella. (Subdiv. (a).) *O. latincisa* sp. nov.
- Without translamella. (Subdiv. (b).)..... 2.
2. Pseudostigmatic organ large, with a straight, simple posterior margin and a convex, pectinate anterior margin..... *O. helwina* sp. nov.
- Pseudostigmatic organ smaller, clavate and simple..... *O. enodis* sp. nov.

Oribata latincisa, new species. (Plate III, Fig. 11.)

Dark reddish brown; legs yellowish brown.

Cephalothorax as broad as long. Lamellæ almost as long as cephalothorax, broadest at the anterior part where they end in large bilobed cusps; translamella a narrow blade on edge, one third as broad as long; lateral lamellæ present, crescent- or sickle-shaped and not quite reaching to tips of lamellar cusps. Prominent tecto-

pedia are present for the anterior pair of legs. Lamellar hairs straight and pectinate, three fourths as long as the lamellæ; hair of lateral lamella strongly curved and pectinate on outer margin, slightly shorter than the lamellar hairs; interlamellar hairs long, slightly curved and pectinate, slightly longer than lamellar hairs. Pseudostigmatic organs short, subcapitate.

Abdomen about four fifths as broad as long; pteromorphæ truncate anteriorly and not extending beyond the anterior margin of abdomen. Dorsum with several short, stiff, straight bristles. Genital covers smaller than the anal covers and situated about one and one half times their length in front of the latter; anal covers broadest at their posterior ends and situated about one half their length from the posterior margin of the ventral plate.

Anterior pair of legs three fifths as long as the body. The tibiæ and genuals of legs I and II each bear on their outer sides a large, stout, pectinate spine or bristle. Ungues tridactyle; dactyles unequal.

Length, 0.70 mm.; breadth, 0.50 mm.

Under a log. Collected by the writer at Urbana, Ill. A single specimen.

Oribata helvina, new species (Plate III, Figs. 12 and 13.)

Light yellow.

Cephalothorax two thirds as broad as long; lamellæ narrow, of uniform width, about two thirds as long as cephalothorax; no translamella. Lamellar hairs straight, as long as the lamellæ; interlamellar hairs equal to lamellar hairs; anterior lateral bristles two thirds as long as the lamellar hairs, pectinate, strongly curved and extending one half their length beyond the tip of the rostrum. Pseudostigmatic organs large, clavate and barbed on the anterior margin, posterior margin without barbs. The pseudostigmatic organs are as long as the lamellæ.

Abdomen two thirds as broad as long. Pteromorphæ one half as long as abdomen, truncate anteriorly and not extending beyond the anterior margin of abdomen. Genital covers small, two thirds as long as the anal covers and situated twice their length in front of the latter. Anal covers situated almost approximate to the posterior margin of abdomen. Abdomen hairless.

Legs subequal; anterior pair two thirds as long as the body; tarsus and tibia subequal; genual one half as long as tibia. Ungues tridactyle; dactyles unequal.

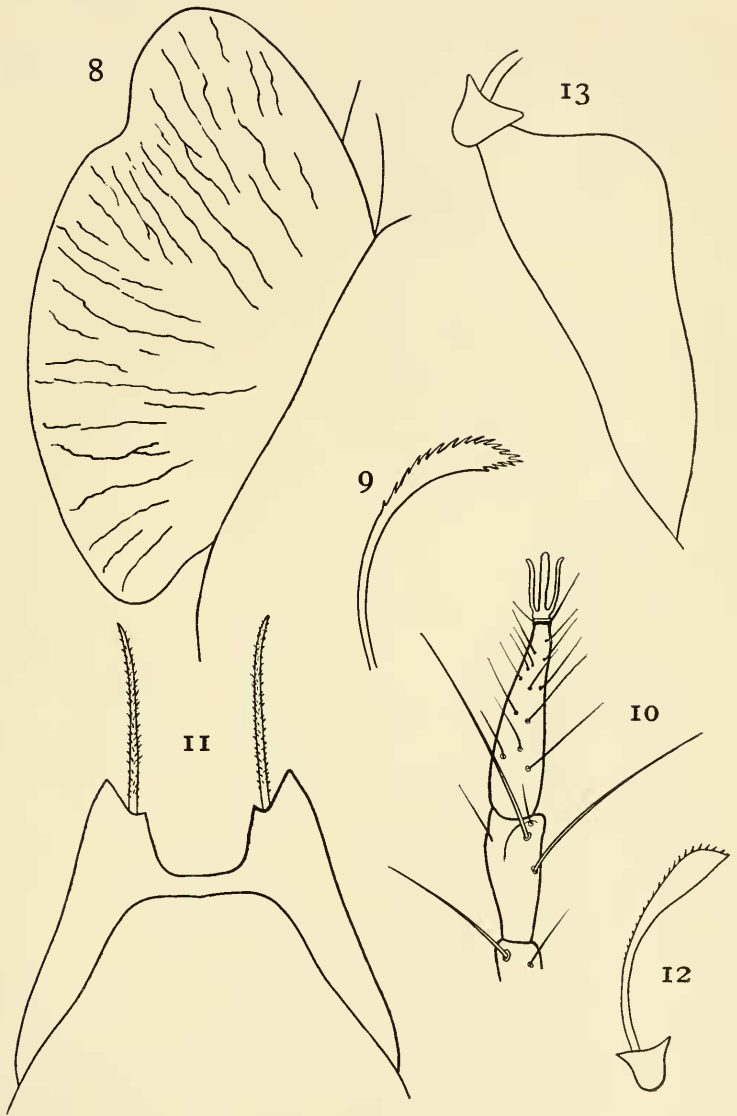
Length, 0.38 mm.; breadth, 0.22 mm.

From dead leaves. Collected by the writer at Urbana, Illinois. Three specimens.

Oribata enodis, new species. (Plate IV, Fig. 14.)

Light brown; integument of medium thickness; surface smooth.

Cephalothorax about one third as long as abdomen; lamellæ long and narrow, about three fifths as long as the cephalothorax, anterior end free and bearing a large, pectinate bristle about two thirds as long as the lamella itself. There is a pair of lateral lamellæ which are slightly longer than the median lamellæ and are curved anteriorly towards the median plane. Interlamellar hairs similar to lamellar hairs but



H. E. Ewing, del.

Oribatoidea.

longer and slightly curved. There is a lateral pair of bristles situated just below the anterior end of the lateral lamellæ. They are large, curved, pectinate and inclined towards the median plane. Pseudostigmatic organ with short peduncle and large, oblong, clavate head.

Abdomen two thirds as broad as long; pteromorphæ truncate, not extending beyond the anterior margin of abdomen. Genital covers two thirds as long as anal covers and situated about one and one half times their length in front of the latter.

Legs of medium size; tarsus and tibia subequal; femur subglobose. Ungues tridactyle. The legs bear many rather short, curved, pectinate bristles.

Length, 0.35 mm.; breadth, 0.22 mm.

Under logs. Collected by the author, Urbana, Illinois. One specimen.

Genus **ORIBATELLA** Banks.

Without spatulate hairs; body never pitted; wings of abdomen never attached to cephalothorax; lamellæ large and attached to the dorso-vertex by their posterior margins only.

This genus is rich in species in this country but in Europe is not so well represented.

Oribatella magniseta, new species. (Plate IV, Fig. 15.)

Black; integument thick and reticulate.

Cephalothorax one third as long as abdomen; lamellæ very large, almost completely obscuring the cephalothorax, attached by the posterior margin only, bifid in front. The anterior pair of lamellar cusps are as long as the rest of the lamellæ and extend beyond the tip of the rostrum. Lateral lamellæ very broad, truncate in front and not extending beyond the middle of the cephalothorax. No translamella. Lamellar hairs long, straight, slightly pectinate, and as long as the lamellæ from which they extend. Interlamellar hairs erect and equal to lamellar hairs; anterior lateral hairs two thirds as long as lamellar hairs, much curved and strongly pectinate. Pseudostigmatic organ erect, elongo clavate, pectinate.

Abdomen subglobose; pteromorphæ two thirds as long as the abdomen, slightly pointed in front, but not extending beyond the anterior margin of the abdomen. Genital covers equal to anal covers and situated twice their length in front of the latter. The dorsum of abdomen has on each side eleven enormous, straight, slightly pectinate bristles; three along the margin of attachment of the pteromorphæ with the abdomen, four in a longitudinal row near the median plane, and four situated on the posterior latero-dorsal aspect.

Legs of moderate length and bearing conspicuous, curved, dentate bristles. Ungues tridactyle.

Length, 0.72 mm.; breadth, 0.56 mm.

Under stones. Collected by myself at Dunning, Illinois. Several specimens.

Family NOTHRIDÆ.

Genus LIACARUS Michael.

Body not sculptured nor pitted; last three pairs of legs inserted under the body; with lamellæ; claws tridactyle.

KEY TO SPECIES DESCRIBED.

1. Pseudostigmatic organ with the enlarged part or head situated as usual at the distal end of the same.....2.
Pseudostigmatic organ with enlarged part near the base, the distal portion flagellate.
L. latus sp. nov.
2. Pseudostigmatic organ with very long filiform head equal in length to the pedicel from which it extends.....*L. glaber* sp. nov.
Head of pseudostigmatic organ clavo-lanceolate and about one half as long as the pedicel from which it arises.....*L. magnilamellatus* sp. nov.

Liacarus latus, new species. (Plate IV, Fig. 16.)

Very dark brown; surface of integument smooth.

Cephalothorax triangular, as broad as long; lamellæ large, of about equal width throughout their length, as long as the cephalothorax, bifid in front, anterior one third free; translamella a narrow blade about one fourth as broad as the lamella; no lateral lamellæ. Interlamellar hairs very short, straight, stout and erect, situated at the bases of the lamellæ; lamellar hairs similar to interlamellar hairs, situated at the bottom of notch in the anterior margin of lamellæ, directed slightly towards the median plane; anterior lateral hairs small, straight and inclined markedly towards the median plane. Pseudostigmatic organs elongate, swollen at the base with the remaining parts spine-like, about one half as long as the tarsus of leg I.

Abdomen globose. Genital covers about one and one half times their length in front of the much larger anal covers. Anal covers subrectangular, each one half as broad as long and situated almost approximate to the posterior margin of ventral plate; ventral plate circular. Abdomen hairless.

Legs small; anterior pair about one half as long as the abdomen; tibia longer than tarsus; tarsus I broad at distal end. Posterior legs somewhat longer than the others. Legs well clothed with rather long hairs. Ungues tridactyle; dactyles equal.

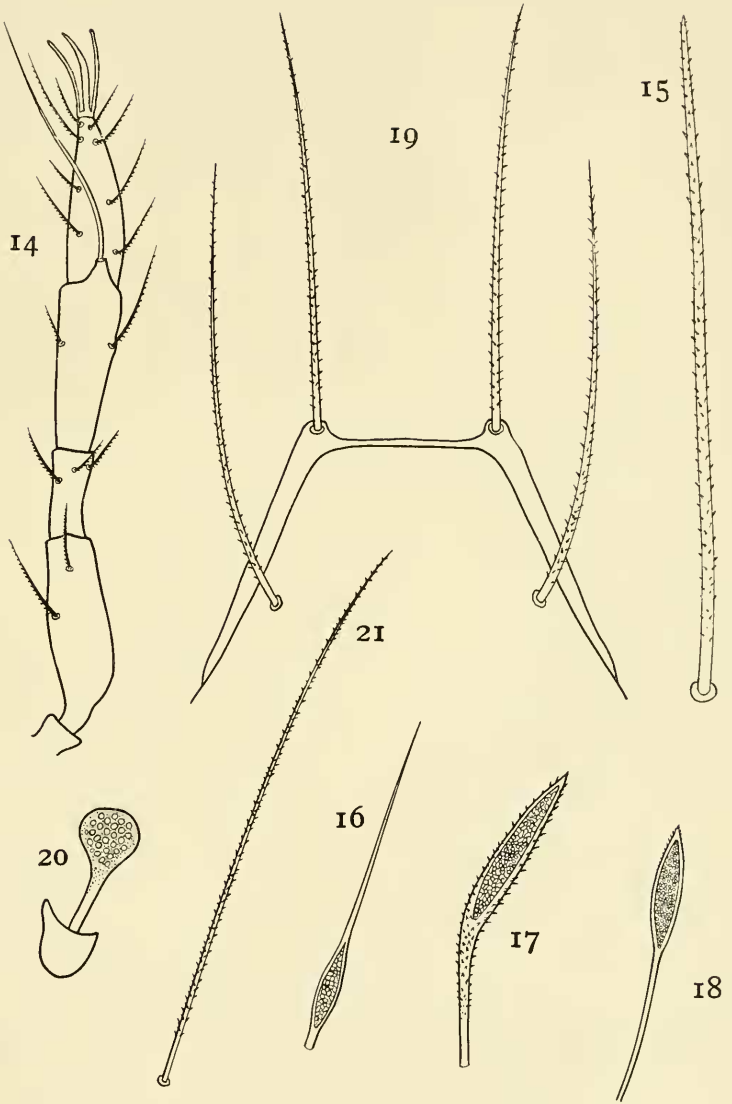
Length, 1.09 mm.; breadth, 0.70 mm.

In moss. Collected by the writer at Urbana, Illinois. Two specimens.

Liacarus glaber, new species. (Plate IV, Fig. 17.)

Brown; integument thick, surface smooth.

Cephalothorax triangular; lamellæ almost as long as cephalothorax and of equal breadth throughout. Lamellar hairs short, about one third as long as lamellæ; interlamellar hairs erect and similar to lamellar hairs. Palpi prominent. Pseudostigmatic organs long and recurved, with a small peduncle and an elongated, long, clavate head.



H.E. Ewing, del.

Oribatoidea.

Abdomen oblong, two thirds as broad as long. Anal covers about twice as large as genital covers, and situated almost approximate to the posterior margin of ventral plate. Abdomen hairless.

Anterior pair of legs extending about one third their length in front of the tip of rostrum. Tibia and tarsus subequal. Ungues tridactyle. Legs clothed with many rather small hairs.

Length, 0.67 mm.; breadth, 0.43 mm.

Under a stone. Collected by myself at Dunning, Illinois. One specimen.

Liacarus magnilamellatus, new species. (Plate IV, Fig. 18.)

Pale yellowish brown; cephalothorax darker than the abdomen.

Cephalothorax triangular, as broad as long. Lamellæ very large and obscuring much of the cephalothorax; each lamella is of almost uniform width throughout its length and the two fuse together at their anterior ends on the median line, so that no true translamella exists. Lamellar hairs straight, pectinate, about three fifths as long as the lamellæ; interlamellar hairs similar to lamellar hairs but larger and slightly curved. Pseudostigmatic organ with a long, slender, straight peduncle and a broad lanceolate head.

Abdomen oval, four fifths as broad as long. Genital covers shorter but broader than the anal covers, situated about one and one third times their length in front of the latter; anal covers situated about one half their length from the posterior margin of ventral plate. Dorsum of abdomen hairless.

Anterior pair of legs almost as long as the abdomen. The hind pair of legs are the stoutest.

Length, 0.51 mm.; breadth, 0.37 mm.

In rubbish. Collected by C. R. Crosby at Columbia, Mo. A single specimen.

Genus NOTASPIS Herm.

Body smooth; with lamellæ; legs inserted at the sides of the body; mandibles chelate.

KEY TO SPECIES.

- 1. With translamella.....2.
- Without translamella.....4.
- 2. Anterior pair of legs extending fully one half their length beyond the tip of the rostrum.....3.
- Tarsus only of first pair of legs extending beyond the tip of the rostrum.
N. depilis sp. nov.
- 3. Translamella fully as broad as lamellæ.....*N. brevisetosa* sp. nov.
- Translamella a mere line.....*N. texana* sp. nov.
- 4. Pseudostigmatic organ with sub-capitate head.....*N. pallida* sp. nov.
- Pseudostigmatic organ with clavo-lanceolate head.....5.
- 5. Lamella very large, blade-like.....*N. lamellata* sp. nov.
- Lamellæ small, lateral, consisting of a chitinous ridge.....*N. minuta* sp. nov.

Notaspis depilis, new species. (Plate IV, Fig. 19.)

Of a uniform dark yellowish brown color.

Cephalothorax cone-shaped. Lamellæ one half as long as the cephalothorax, very narrow, broadest at the anterior ends; translamella a mere line. Lamellar hairs long, straight, pectinate, longer than the lamellæ; interlamellar hairs similar to lamellar hairs; antero-lateral hairs slightly shorter than the lamellar hairs. Pseudostigmatic organ short, capitate.

Abdomen almost as broad as long; dorsum without hairs. Genital covers two thirds as long as anal covers and situated fully twice their length in front of the latter; anal covers subrectangular, one half as broad as long, situated almost approximate to the posterior margin of ventral plate. On the posterior ventral surface of the abdomen are two pairs of hairs.

Anterior pair of legs about three fifths as long as the body; tibia longer than the tarsus. The posterior pair of legs are the longest. Ungues tridactyle, situated on tarsal pedicels; dactyles subequal.

Length, 0.53 mm.; breadth, 0.34 mm.

On peaches infested with *Curculio*, feeding on the exuded sap of the fruit. Collected by L. M. Smith at Metropolis, Ill. Several specimens.

Notaspis brevisetosa, new species. (Plate IV, Fig. 20.)

Light brown; integument smooth.

Lamellæ slightly over one half as long as the cephalothorax, without cusps, broader at the anterior end than at the posterior end; translamella of uniform width for its whole length, being about as broad as the distal end of the lamellæ. Lamellar hairs straight, strongly barbed and about three fourths as long as the lamellæ; interlamellar hairs similar to lamellar hairs; antero-lateral hairs slightly curved, pectinate and extending one half their length in front of the tip of the rostrum. Pseudostigmatic organ capitate, about three fourths as long as femur of leg I.

Abdomen oblong; with four longitudinal rows of short, pectinate bristles, including about six bristles in each row. Genital covers each about twice as long as broad and situated one and one half times their length from the anal covers; anal covers touching the posterior margin of ventral plate.

Anterior pair of legs about equal to the abdomen in length, tarsus less than tibia, tibia with a long tactile hair springing from a tubercle at its distal end. Ungues tridactyle; dactyles unequal.

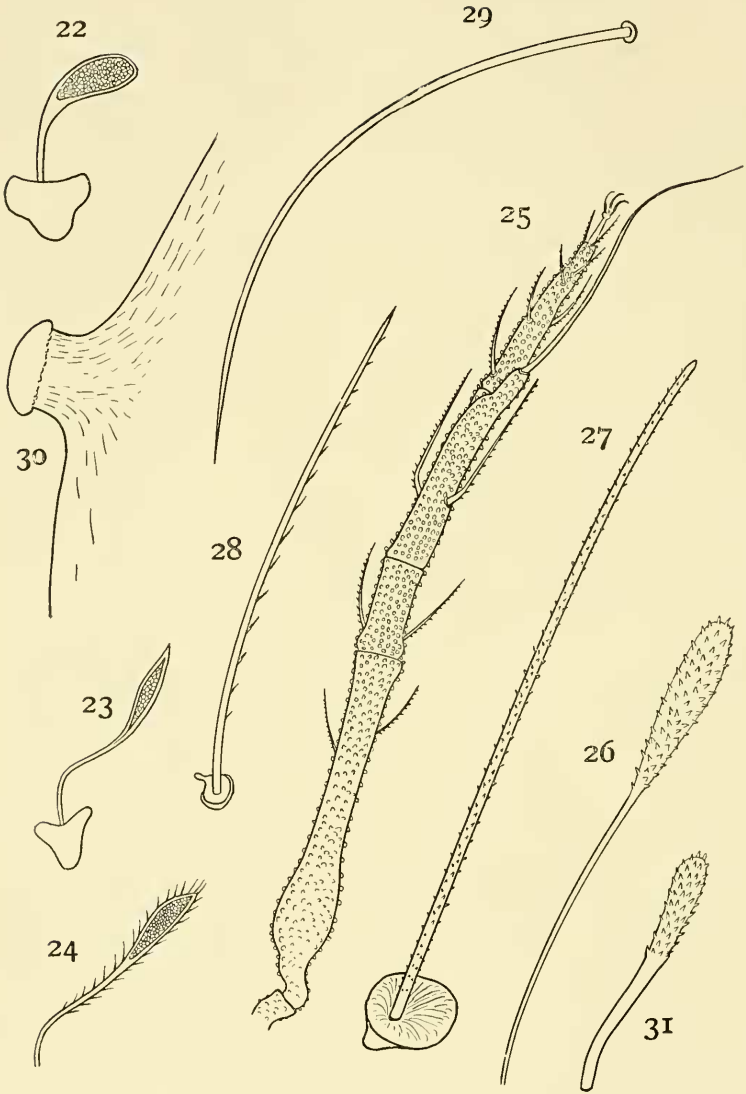
Length, 0.37 mm.; breadth, 0.21 mm.

Shaken from limbs of black walnut, at Topeka, Ill. One specimen.

Notaspis texana, new species. (Plate IV, Fig. 21.)

Chestnut brown.

Cephalothorax as broad as long. Lamellæ narrow blades on edge, three fourths as long as the cephalothorax, broadest at the anterior end; translamella a mere line; lateral lamellæ very small. Lamellar hairs long, straight, pectinate, equal to the lamellæ in length; interlamellar hairs similar to the lamellar hairs but slightly longer;



H.E. Ewing, del

Oribatoidea.

antero-lateral hairs but slightly curved, almost as long as the lamellar hairs. Pseudostigmatic organ small, subcapitate.

Abdomen subglobose. Dorsum with a very few minute, rudimentary hairs. Genital covers much smaller than the anal covers and situated fully twice their length from the latter; anal covers approximate to posterior margin of ventral plate.

Anterior pair of legs about as long as the body. Tarsus of leg I shorter than the tibia; genual one third as long as the tibia. Ungues tridactyle; dactyles subequal. Length, 0.67 mm.; breadth, 0.45 mm.

In sweepings from grass. Collected by C. A. Hart at the southern end of Padre Island, Texas. Many specimens.

This species is related to *N. depilis* but differs in the following points: the lamellæ are longer than in *N. depilis*, the body is larger and darker in color, and the legs are longer.

Notaspis pallida, new species. (Plate V, Fig. 22.)

Reddish brown; legs lighter than the body.

Cephalothorax longer than broad. Lamellæ a little over one half as long as the cephalothorax. They are very narrow and are of about uniform width throughout. Lateral lamellæ indicated by a slight chitinous ridge. Lamellar hairs almost straight, pectinate, as long as the lamellæ themselves; interlamellar hairs similar to lamellar hairs, erect and situated near the posterior margin of the cephalothorax; anterior lateral hairs strongly curved and about three fifths as long as the lamellar hairs. Pseudostigmatic organ with recurved peduncle and large, clavate head.

Abdomen three fourths as broad as long. From the shoulders there is a small chitinous expansion which indicates a relationship to the *Pterogasterinae*. Abdomen with about two dozen rather long bristles mostly situated around the margin. Genital covers much smaller than the anal covers, each about one half as broad as long; anal covers situated a little over their length from the genital covers and about one fourth their length from the posterior margin of ventral plate.

Tarsus and tibia of leg I subequal; genual one half as long as the tibia. Ungues tridactyle; dactyles unequal.

Length, 4.48 mm.; breadth, 0.30 mm.

In moss. Collected by the writer at Urbana, Ill. Two specimens.

Notaspis lamellata, new species. (Plate V, Fig. 23.)

Very light yellowish brown.

Cephalothorax as broad as long. Lamellæ three fourths as long as the cephalothorax, much broader in the middle than at either end; no translamella or lateral lamellæ. Lamellar hairs straight, pectinate, about one half as long as the lamellæ; interlamellar hairs small, erect, about three fourths as long as the lamellar hair; antero-lateral hair but slightly curved and situated near the median line. This species is rather peculiar in possessing a pair of hairs upon the rostrum slightly in front and inside of the lamellar cusps; rostral hairs almost equal to lamellar hairs. Pseudostigmatic organ with slender recurved peduncle and sublanceolate head.

Abdomen broadly pointed posteriorly. Dorsum with a few fine hairs. Genital covers much smaller than anal covers and situated about one and one half times their length in front of the latter; anal covers each about one half as broad as long and situated almost approximate to the posterior margin of ventral plate.

Anterior pair of legs almost as long as the abdomen. Tarsus and tibia of leg I subequal in length; genual three fifths as long as the tibia. Ungues monodactyle; about one third as long as tarsus.

Length, 0.42 mm.; breadth, 0.27 mm.

In rubbish. Collected by C. R. Crosby at Columbia, Mo. Three specimens.

Notaspis minuta, new species. (Plate V, Fig. 24.)

Light yellowish brown; surface of integument almost smooth.

Cephalothorax large, one half as long as abdomen. Lamellæ small and indistinct, extending only a short distance in front of the pseudostigmata. No translamella. Dorso-vertex hairless. There is a pair of small, curved bristles at the tip of the rostrum. Pseudostigmatic organ very large, about two thirds as long as the cephalothorax, with a long, thin peduncle and a large, long, markedly pectinate head.

Abdomen oblong, almond-shaped. Dorsum of abdomen with a few fine hairs around the margin. Ventral plate shield-shaped, it does not extend over the anterior one fourth of the ventral surface of abdomen. Genital covers twice as long as broad and situated in approximation to the anterior margin of ventral plate. Anal covers much larger than the genital covers and situated about one and one fourth times their length behind the latter, and one fourth their length from the posterior margin of the ventral plate.

Legs large; anterior pair longer than abdomen. Tarsus slightly longer than tibia. Femur and coxa of leg III enlarged. Ungues tridactyle.

Length, 0.29 mm.; breadth, 0.14 mm.

Under old pieces of timber. Collected by the author at Arcola, Illinois. Two specimens.

Genus DAMÆUS C. L. Koch.

Ventral plate anchylosed to dorsal plate; mandibles chelate; without lamellæ; legs thin, usually with swollen or globose segments, and much longer than the body.

Div. I. Abdomen round or subglobose; legs about twice as long as the body and with some of the segments moniliform.

Div. II. Abdomen oblong; legs less than twice as long as the body; segments of the legs but slightly swollen.

Div. I.

Only the two proximal segments of the legs swollen; second pair of legs much shorter than the rest; tibia of leg I bearing a large tubercle distally from which springs a very large tactile bristle. (Subdiv. (a).).....*D. magnisetosus* sp. nov.